


N.E.W. Horticulture Newsletter

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City foresters are conscientious of the role increased tree diversity plays in lessening the effects of disease and insect infestations such as EAB.

DED Resistant Elms for the Urban Forest

*By: Chad P. Giblin and Jeffrey H. Gillman - Urban Forestry and Horticulture Research Institute,
Department of Horticultural Science, University of Minnesota*

Why Elms?

For much of the past century, American elms have been a very important part of our urban forest, especially in the Twin Cities. Since the outbreak of Dutch Elm Disease (DED), however, urban foresters and nursery growers have been scrambling to find suitable replacements for these tough specimens. The Minneapolis Park and Recreation Board (MPRB) has been involved in trying out the resistant elm varieties for many years. This interest helped establish a cooperative research project between MPRB and the Urban Forestry & Horticulture Research Institute at the University of Minnesota to evaluate the various elms available in the nursery trade. The goal was to find as many new elm selections as possible and get a feel for their suitability in this northern climate. Since 1999, over 1,000 elms selected from 20+ different varieties have been evaluated. Most have made their way onto the streets and in the parks of Minneapolis and St. Paul (Zone 4b).



Variety is the Spice of Life!

Moderation is always a wise choice. Accordingly, most urban foresters are taking a cautious approach to replanting large numbers of any particular tree in their towns and cities. For example, Minneapolis has approximately 19% ash trees on the streets and is trying to limit the over-planting of any one particular species or variety. City foresters are conscientious of the role increased tree diversity plays in lessening the effects of disease and insect infestations such as the emerald ash borer (EAB). Species diversity, combined with a good tree inventory, allows for quicker and more efficient planning and response to exotic pest introductions or disease outbreaks. The multi-specific parentage of these elms will contribute high levels of genetic diversity to the urban forest and may help delay major outbreaks and spread of future disease problems and insect infestations.

Continued on page 2...

Elms...*(continued from page 1)*

Maintenance

Elms require unique levels of maintenance for long-term health and function. Many varieties will require frequent pruning visits during their first ten years of life outside of the nursery. Maintenance of strong central leaders is of critical importance, especially for boulevard plantings. In many cases it appears that elm bark beetle feeding sites may create branch inclusions that may tear out under stress. Scouting for these dysfunctional branch attachments is critical when trees are young to avoid “tear-outs” which, in many cases, send an otherwise good tree to the chipper!

Because pruning young elms is so important, we have been examining both historical and modern pruning methods on tree health and performance. By examining historical records and photographs and combining that knowledge with modern scientific research and arboricultural techniques, we have recently released a pruning manual, *Pruning Young Elms*, specifically aimed at maintenance of juvenile elm trees. This book guides the reader through the difficult years after planting a typical elm tree.

Varieties

Accolade™
U. japonica x
wilsoniana

This Morton Arboretum introduction has been a great selection for many years. This tree has a mature form that is similar to the American elm, but is slightly more upright and a bit smaller. Accolade™ has shown excellent performance in winter hardiness tests in the Twin Cities area (Zone 4b), and generally outperforms many other varieties in terms of insect resistance as well. In 2004 we discovered two Accolade™ elms that had DED. While this is disconcerting, it was a good reminder of what the term “resistant” means; none of these selections are “immune” to DED. One of the two trees, currently under observation at the U of MN, currently has no symptoms of the disease and continues to grow with incredible vigor!



Danada Charm™
U. japonica x
wilsoniana

Another Morton Arboretum introduction, Danada Charm™, ranks number one in nursery evaluations in annual percent caliper increase, and number two in stem growth rate. It is literally the fastest growing elm in the nursery! Its leaves are larger than those seen in Vanguard™, Accolade™, and Patriot but are still lustrous and fairly dark green. Danada Charm™ has only moderate resistance to foliage-feeding insects and so will require careful site selection and scouting for elm leaf beetles and other pests. Nonetheless, after nearly 10 years of evaluations of city trees in Minneapolis, Danada Charm has come out very high in quality and performance. Growth rate continues to be incredible and it outperforms many other selections in form and condition.

Commendation™
Complex hybrid with
U. carpinifolia, *U.*
pumila, and
Accolade™ heritage

Also introduced by the Morton Arboretum, Commendation™ has been very vigorous in our nursery evaluations. It is reported to have excellent drought resistance and adaptability to tough sites. The ultimate form on this tree is more oval than vase-shaped but is still quite attractive. In nursery evaluations, Commendation™ ranked #3 in both percent annual caliper increase and annual twig growth. This tree should be a good all-around tree for a variety of sites in the urban forest, but, like Danada Charm™, it is fairly susceptible to foliar feeding by insects.

Continued on page 10...

Cultural Practices Usually Are The Best Medicine for Turfgrass Problems

By: Jim Kerns, UW-Madison Dept. of Plant Pathology

Being a turfgrass pathologist my job is always focused on the problems associated with turf, especially those caused by plant pathogens. However, the Turfgrass Diagnostic Lab diagnoses other problems like those caused by insects, weeds and abiotic problems. With respect to diseases, the best medicine is proper maintenance and species selection. So in this article I wanted to review some fundamentals for turfgrass management in a landscape.

Grass Selection

The first step and most important step is grass selection. This can be tricky because Kentucky bluegrass is the predominate species grown in Wisconsin. The benefits of Kentucky bluegrass are its color, recuperative ability and wear tolerance. Two keys with Kentucky bluegrass are, it loves sunlight and nitrogen. Planting Kentucky bluegrass in a shaded environment is asking for failure. Powdery mildew and leaf spots run wild on Kentucky bluegrass when it is grown in the shade. Yet, there are other options that will work, especially in certain microclimates. We recommend planting Supina bluegrass (*Poa supina*) or fine fescues in a shaded environment. Supina bluegrass does very well in shady, wet conditions and fine fescues thrive in dry, shady conditions.

Tall fescue is another option for landscape turf. This grass has excellent drought tolerance, wear tolerance, color and a lower nitrogen use rate. The major issue with tall fescue is its susceptibility to Pythium blight, brown patch and winter injury. However, I think we will gradually see more tall fescue in Wisconsin because it is more drought tolerant than Kentucky bluegrass. Basically, the idea with grass selection is one species is usually not ideal. Pick grass species based on the landscape and keep in mind that mixing species is an excellent way to prevent problems.

Following a sound management plan for turfgrass will minimize potential for problems.

Fertilization

Once the grass species is selected, the next step is fertilization. When the yard is less than 10 years old, typically 3 to 4 lbs of nitrogen per 1000 ft² is required. Apply 3 lbs N/1000 ft² if clippings are returned and 4 lbs N/1000 ft² if clippings are collected. For yards older than 10 years old, usually 2 lbs N/1000 ft² or less will suffice. Returning clippings usually amounts to 1 lb N/1000 ft² and older yards have more organic matter that provides nitrogen.

Timing of fertilization events is paramount! The absolute best practice is to apply nitrogen in small amounts consistently throughout the season, but most individuals do not have the time or resources to do this. Therefore, applications should be targeted around Mid-May, July 4th, September 1st and October 1st and the total N amount per year should be divided equally across these dates. You may notice that applications are not recommended for late October or April and that's because nitrogen is not getting in the plant late in the fall. During the spring, microbial activity starts and nitrogen is mineralized from the organic matter. Applications of crabgrass prevention products that are coupled with a nitrogen fertilizer can promote disease activity in the spring and summer. It is difficult to find crabgrass preventers by themselves for the general public, so pick products that have at least 50% slow release N (water insoluble nitrogen).

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Turfgrass Problems... (continued from page 3)

Thatch Management

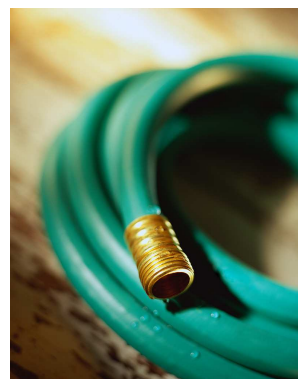
Thatch management is a critical component of preventative lawn management. Thatch is a layer of partially decomposed rhizomes, stolons and other organic material that develops at the soil surface. Although a small thatch layer is desirable, exceeding 1.5 inches usually equates to serious problems. Thatch can be managed effectively by not over fertilizing and overwatering. Also, core aeration is an excellent tool for thatch mitigation. De-thatching is a powerful method that is very visual, but sometimes those machines do more damage than good. Compaction is another common and severe problem in landscape turf and aeration helps to alleviate compaction. Granted I may be a little over zealous with my recommendations for aeration, but I recommend at least one aeration every other year. Now if the lawn or landscape is struggling, then I recommend aerifying the area once or even twice a year until the problem or problems subside. The ideal time for scheduling an aeration event is early- to mid-fall.



Thatch is an ideal environment for roots to grow; therefore, exceeding 1.5 inches usually means rooting depth will be compromised. Thatch holds moisture and nutrients well, but once that layer dries out it can be extremely difficult to re-wet. Finally, thatch is an excellent environment for turfgrass pathogens and when lawns develop diseases they usually have a very thick thatch layer. Monitoring the thatch layer is easy, just cut a small piece of sod out and measure its thickness with a ruler.

Irrigation

The last component of lawn management is irrigation. I understand that the vast majority of homeowners and landscapes do not have an automated irrigation system, but understanding how much water turf plants need is critical. Kentucky bluegrass requires about 1" water per week. It is ideal to apply that water "deeply and infrequently" over the course of the week. For example, turn the irrigation system or sprinkler on twice a week for 20 minutes. Of course if it has recently rained, supplemental irrigation may not be needed. One of the best tools for managing a landscape is a rain gauge! This irrigation strategy promotes good rooting depth and minimizes leaf wetness. Irrigation events should be timed for early morning to late morning hours. Watering at night promotes extended leaf wetness, which can facilitate infection by turfgrass pathogens.



Just to reiterate the concepts discussed in this article:

Four Fundamentals of Turfgrass Management in a Landscape

Turf Selection

Fertilization

Thatch Management

Irrigation

Following a sound management plan for turfgrass will minimize potential for problems. However, there will still be cases when pathogens, bugs or weeds may develop. If a customer, client or you yourself are experiencing problems, please do not hesitate to contact the Turfgrass Diagnostic Lab www.plantpath.wisc.edu/tdl/. We can help with management recommendations and problem diagnosis.

Ants in the Landscape

By Phil Pellitteri, Dept. of Entomology, UW-Madison

When you look closely, there is a lot more ant activity in the average yard than you might think. The average yard has 10 cornfield ant colonies per square yard. We have at least 80 species in the state, but there are only four genera that seem to cause some landscape problems.

Ants live in colonies. Most of the ants you see are wingless, sterile females called workers. For some ants the workers are all one size, for others they can come in a number of sizes. Depending on the species, they can have one or multiple queens. At certain times many winged forms will come bubbling out (swarm) from the colony. These are the males and unmated queens. They fly away in search of a mate from another colony. Once mated the queen will rip off her wings and try to find a site to begin a new nest. The swarming season will vary depending on the type of ant. Common landscape ants include:

Field Ants

(Genus *Formica*) These are the large mound-building ants with at least 10 species in the state. They can be black, brown red or two-toned in color and rather large. They do not come inside for food, but will bite if disturbed. The colonies have one queen and can live for 10 years or more. The nest can be 2 ft. high and 5 ft. wide. Nests can be high enough to interfere with lawn mowing, kill turf grass, and the ants have been known to kill plants and small trees that shade the nest by injecting formic acid into the roots.

Cornfield Ants

(Genus *Lasius*) There are at least five species of these small reddish-brown ants. They are the most common species to kick dirt up between pavement blocks and nest under slabs. They are very common in lawns but the small silver dollar-sized nests are usually overlooked. More of an aphid tending species, very dramatic swarms are seen in late sunny afternoons in late August and September.

Carpenter Ants

(Genus *Camponotus*) Nest in stumps, old landscape timbers, dead tree limbs and hollow trees. They do not eat wood, but nest in the soft substrate. They are large black or black and red ants and look very similar to field ants. They will nest indoors in rotting wood and soft material such as foam board. You often find sawdust being pushed out of infested trees, which always indicates some bad wood or heart rot in the tree. There is only one queen and the diet consists of other insects, sweets and people and pet food.

Yellow Ants

(Genus *Acanthomyops*) Also called **citronella ants** because if crushed they smell like lemon. Found most of the time when digging in moist soil or under rocks. Ants are middle sized, yellow to light brown, and cause no problems inside or out. They do swarm early in spring and can be mistaken for termites, which are not common in Wisconsin.



Field ants



Field ant nest



Carpenter ants



Yellow ants under landscape fabric

Ants...(continued from page 5)

Controlling ants

It sounds easy – find the nest and kill the queen. Workers cannot make more ants without the queen. But she might be three feet underground or under a four-inch cement slab, or 20 feet high in a tree. And you might have many colonies and multiple queens.

Broadcast treatments

Does not matter what product, or if it is granules or sprays- in the long run broadcast treatments do not work. You can see results in 20 minutes or less- the ants do not come to the surface. They are repelled by most products and will not cross the treated barrier. Even when diazinon and chlorpyrifos were used – you only kill a few workers and do not get the product to the queen. Treating golf course greens have shown us how hard it is to eliminate ants in turf- even if you can irrigate your product in.

Baits

Do not confuse granules with baits. Granules use clay or plant-based material with insecticide on the surface and work as a contact kill. Baits use some type of food base (sweet, protein, or fat) and a pesticide that must be eaten.

Different baits are made for the different diets of ants and you must match the bait with the ant. Most baits have been developed for ant problems indoors. The outdoor fire ant baits that work so well down south are ineffective on ant problems we have in Wisconsin.

The chemicals found in baits include boric acid, insect hormones, fipronil, and other novel chemistries. They tend to be less toxic than broadcast sprays. Ants feed their young, other ants, and the queen with the food they bring in, so if you can get the workers to take the bait you can kill out the whole colony. Bait products are used most often by commercial pest control firms (like Maxforce bait granules or gels for carpenter ant control). However, there are some ants like the yellow ants that do not respond to baits.

Spot treatments

Remember it is all about getting to the queen. For the big field ant mounds it is best to use a metal bar or rod and push 4-8 channels as deep as you can into the nest. Then drench the nest with ½-2 gallons of diluted product. You are trying to get the material deep enough to kill the queen. There are over 1300 products registered in Wisconsin for ant control. There are numerous pyrethroids, permethrin, bifenthrin, cyfluthrin, lambda cyhalothrin, and deltamethrin plus malathion, and carbaryl (Sevin). There are also natural plant oils such as clove, mint, and others. These only kill on contact and do not have a residual. If there is a problem outdoors with brickwork or pavement block- consider using polymeric sand. This greatly reduces weeds and ant activity when used instead of regular sand as a filler.



**The key to
controlling ants...**

**Find the nest and
kill the queen.**

Indoor Ants: Things get more complicated indoors. There are a number of other species involved including pavement ants, odorous house ants, thief (grease ants), pharaoh ants, and acrobat ants. The same rules apply – find and treat the nest – but I will leave the details to another article.

Fairy Rings in Lawns

By: Paul Koch, Turfgrass Diagnostic Lab, UW-Madison

Fairy ring is a common disease that can be found growing in the soil of forests, prairies, and home lawns. The fungus itself does not normally infect the turfgrass plant. Instead the fungus decomposes organic matter present in the soil, releasing nitrogen which is then absorbed by the plants and produces a darker green color (much the same way fertilizer causes the turf to turn a greener color). The fungus grows radially from a center point, often forming large circles, as shown in the photographs below. Once the fungus spreads throughout the entire lawn oftentimes symptoms do not reoccur, and it is also common for symptoms to appear seemingly out of nowhere and disappear just as fast.

Unfortunately, there is very little that can be done to control this confusing and sometimes frustrating disease. Fertilizing the entire lawn could green up the surrounding turf and “mask” the symptoms in the circle. Another possible option would be to aerify the lawn, especially in the area of the fairy ring, to remove some organic matter in the soil. Fortunately, fairy ring is usually an aesthetic problem alone, and rarely kills the turfgrass. As the fungus continues to spread through the lawn the symptoms should decrease over time.

Fairy ring mushrooms in a home lawn.



Dark green grass caused by fairy ring decomposing organic matter in soil, releasing nitrogen.



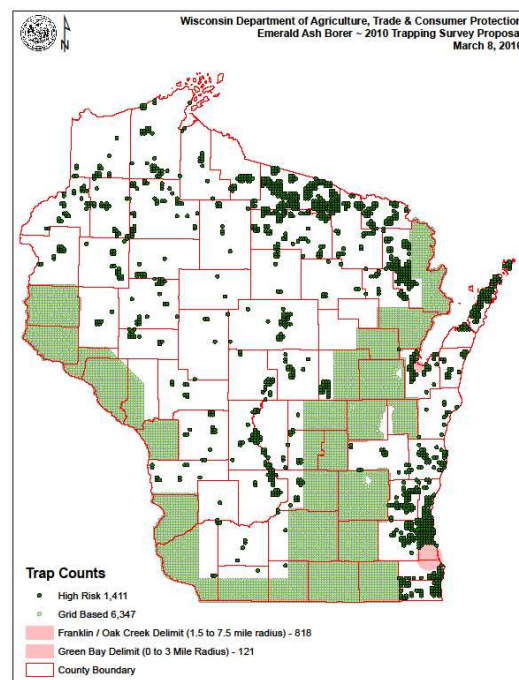
EAB Survey Gears Up

By: Michael (Mick) Skwarok, Plant Pest & Disease Specialist, WDATCP

MADISON – Summer employees with the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) are preparing to set up thousands of traps in trees across the state in an ongoing effort to find infestations and track the spread of the tree-killing emerald ash borer. The purple box-like contraptions are hung in ash trees and utilize a chemical lure to attract the adult beetle to its sticky surface. Beginning the week of May 3, DATCP survey staff started putting up roughly 8,700 traps. All traps should be in place by June when the adult beetles begin to emerge. The traps will be taken down in September.

“Wisconsin now has three known infestations of EAB,” said Jennifer Statz, EAB program coordinator with DATCP. The traps we’re about to deploy will help us get a better idea of the size of the infestations we know about and, possibly, lead us to other areas in the state where the ash borer has arrived.”

Infested areas in Wisconsin include the Village of Newburg along the Ozaukee-Washington county border, Victory in the southwest near the Mississippi River, and the communities of Franklin and Oak Creek in Milwaukee County. Adult beetles have also been caught in Green Bay and Kenosha, but infested trees have yet to be confirmed. Because of these infestations and the presence of beetles, 11 counties are under a quarantine that restricts the movement of certain products, such as hardwood firewood, that could give transport to the pest. Those counties are: Kenosha, Racine, Milwaukee, Waukesha, Ozaukee, Washington, Fond du Lac, Sheboygan, Brown, Vernon and Crawford. Additional counties will be quarantined if new discoveries are made this summer.



New Plant Varieties

Firebird Crabapple

Malus sargentii 'Select A'

Hardiness: Zone 3

Habit: Grows more upright when it's young and eventually spreads out to oval shape

Size: Compact 8 feet wide by 5 feet tall after about 18 years

Bloom: Red flower buds, fragrant when they open

Fruit: Small, red crabapples slightly less than ½ inch in diameter. Fruit remain hard and colorful late into the winter. It's ornamental fruit quality and persistence is better or equal to that of *Malus* 'Donald Wyman'.

Pests/diseases: Resistant to apple scab disease

Source: Johnson Nursery; www.johnsonnursery.com



Weeping Colorado Blue Spruce

Picea pungens 'The Blues'

Hardiness: Zone 3

Growth habit: Dwarf, weeping

Size: About 6 feet tall by 4 feet wide. Staking is needed to feature its weeping habit.

Needle color: Powder blue

Landscape feature: Specimen plant

Exposure: Need full sun

Pest/diseases: Susceptible to cytospora canker, rhizosphaera needle cast diseases

Source: Monrovia Nursery; www.monrovia.com

Chocolate Drop Sedum

Sedum 'Chocolate Drop'

Hardiness: Zones 4-9

Habit: Clumping mound

Size: 14 inches wide by 8 inches high; flower height 10 inches

Growth rate: Fast

Flowering season: Summer

Exposure: Full sun

Landscape feature: Very dark foliage, multi-stemmed and upright.

Source: Terra Nova Nurseries; www.terrannovanurseries.com



Firebird Coneflower

Echinacea 'Firebird'

Hardiness: Zones 4-9

Habit: Excellent upright, well-branched habit

Size: 22 inches wide by 18 inches high; flower height 25 inches

Bloom time: Summer

Exposure: Full sun

Bloom color: Great red, shuttlecock-shape flowers, large dark cones.

Source: Terra Nova Nurseries; www.terrannovanurseries.com



New varieties...(continued from page 8)

Bloomerang Lilac

Syringa x 'Penda'

Bloom time: Spring; repeat blooms for mid-summer until frost

Bloom color: Pale pink or white

Size: 4-5 feet tall and 4 feet wide

Exposure: Full sun to partial shade

Landscape Feature: A remarkable new reblooming lilac with a heavy spring bloom and strong rebloom from mid-summer until frost. The flowers are wonderfully fragrant. Excellent mildew resistance.

Source: Spring Meadow Nursery; www.springmeadownursery.com



Snowcap Allium

Allium schoenoprasum 'Snowcap'

Hardiness: Zones 3-9

Size: 12 to 15 inches tall

Landscape feature: Charming semi-dwarf with pristine white flowers. This showy, robust plant blooms May into June.

Source: Klehm's Song Sparrow Farm & Nursery; www.songsparrow.com

Golden Ruby™ Barberry

Berberis thunbergii 'Goruzam'

Hardiness: Zones 4-8

Habit: Slow growing, dwarf compact shrub

Size: 24 inches tall and wide

Foliage color: Red

Exposure: Full sun

Source: Monrovia Nursery; www.monrovia.com



Cinnamon Flakes™ Birch

Betula Chinensis Cinnamon Flakes™ ('KLMD')

Hardiness: Zones 4-9

Size: 8 feet tall by 6 feet wide in 10 years

Exposure: Full sun to partial shade

Landscape features: Smooth cinnamon-colored exfoliating bark. Foliage is a glossy dark green in summer, changing to yellow in fall.

Source: Klehm's Song Sparrow Farm & Nursery; www.songsparrow.com

Elms...*(continued from page 2)*

Camperdown *U. glabra*

This tree is the only true Wych elm or Scots elm (*U. glabra*) evaluated at our research nursery. The first year after planting in fall of 1999, the Camperdown performed quite well, but once “normal” winter temperatures returned this selection suffered *severe* winter kill and dieback. 90% of these trees were lost in the winter of 2002–2003. There are some specimens planted in Como Park in St. Paul that are doing quite well and in a park or landscape setting they might have the benefit of a unique microclimate or a protective groundcover that was lacking in our research nursery.

Cathedral *U. pumila* x *japonica*

Cathedral is another long-time favorite DED-resistant selection introduced by the University of Wisconsin. Due to its vase-like form in the nursery, this variety was selected by the University of Minnesota to replace American elms lost on the Northrop Mall on the Minneapolis Campus. This selection requires a lot of attention in the nursery, and is quite prone to develop branch inclusions. Timely structural pruning will prevent most problems. Cathedral has good resistance to elm leaf beetle and other chewing insects. However, it appears to be a favored food source for leaf hoppers and other, related, insect pests. There are numerous Cathedral elms on many of the toughest sites in Minneapolis and St. Paul. These trees continue to thrive in spite of pollution, urbanized soils, and drought.

Discovery *U. japonica*

Like Accolade™, the Discovery elm has been around awhile and many are already familiar with its characteristics. It is much slower growing than most of the other varieties, but still packs on stem caliper at a good rate. Some sources suggest its ultimate form may be vase-like, but, in our experience, it has been fairly upright. This tree appears to be quite hardy in St. Paul, and there are a number of these already growing in the Minneapolis Parks system as well. Even though it is a fairly slow growing tree, this selection requires a fair amount of crown thinning as a young tree. Because of this very dense crown, co-dominant leaders are also quite common. Like Accolade and Cathedral, Discovery is extremely drought tolerant and is performing very well in city evaluations.



Frontier *U. carpinifolia* x *parvifolia*

Frontier has simply spectacular deep burgundy fall color. Its big drawback for Minnesota is poor winter hardiness. In the nursery setting there has been severe twig dieback almost every winter. This was confirmed after trying new selections on their “own roots” in the winter of 2004–2005. The tree sometimes “bounces back” but it lacks the form and integrity required in most urban forest settings. This is one selection that is currently not recommended for the Twin Cities (Zone 4b).

Continued on page 11...

Elms...(continued from page 10)



Homestead
Complex hybrid with
U. pumila, *U.*
carpinifolia, and *U.*
hollandica heritage

Homestead is another nice tree introduced by the elm breeding program at the U.S. National Arboretum. While its leaves are smaller and the form isn't at all like an American elm, it still proved to be quite tough and vigorous at the nursery. Homestead is very similar to Siberian elm (*U. pumila*) in form and leaf characteristics. It did suffer some sunscald and cambial damage the winter of 2000-2001 in nursery evaluations, but it didn't appear to be adversely affected by it in the long term. This tree is fairly easy to find in the trade. Townsend and Douglass (2004) report that, in their research, 10% of Homestead clones died the second year after DED inoculation. There have been a few, unconfirmed reports of DED on these trees in the trade, but these have been rare. In our nursery trials, this selection was one of the favored food sources for elm leaf beetle (ELB).

New Horizon
U. pumila x
japonica

The New Horizon elm is a product of a cross between *U. pumila* and *U. japonica* and is another introduction from the University of Wisconsin. It has many of the desirable features required for growth in the urban forest: fast growth, good insect resistance, and good DED resistance. In some cases co-dominant leaders and heavy side-branches can develop quickly on this variety, so higher levels of maintenance are required, especially in young trees. Like the Homestead elm, New Horizon appears to be favored by ELB and has shown moderate feeding in our research plots.

Continued on page 12...




Elms for the Twin Cities (Zone 4b): A Guide for Selection and Maintenance (rev. 04/25/2010)

	DED Resistance ¹	Growth Rate	Hardiness	Insect Resistance	Form	Maintenance Requirements	Storm Breakage
Accolade™	very good	fast	excellent	excellent	vase	moderate	excellent
Danada Charm™	very good	v. fast	good	fair	vase	moderate	fair
Commendation™	very good	v. fast	excellent	fair	oval/vase	moderate	good
Camperdown	unknown	slow	poor	good	weeping	moderate	excellent
Cathedral	good	v. fast	excellent	good	vase	high	fair
Discovery	good	slow	excellent	good	upright	moderate	excellent
Frontier	good	slow	poor	fair	upright	low	excellent
Homestead	good	v. fast	good	fair	upright	moderate	good
New Horizon	excellent	v. fast	excellent	good	upright	high	good

¹ Dutch Elm Disease resistance and some of the insect resistance recommendations are based on data and observations at the University of Minnesota combined with previously published work. Please refer to the *Elms for the Twin Cities: A Guide for Selection and Maintenance* for a complete list of citations.

Elms...(continued from page 11)



Patriot *U. wilsoniana* x 'Urban'

This is another newer selection out of U.S. National Arboretum breeding program. Patriot has outstanding summer foliage that is quite glossy and very dark green. Its form generally has been upright in the nursery, but photos of more mature trees show that it has a form very similar to that of *U. americana*. This tree is somewhat hard to find in the trade, but numbers have been increasing over the last few years. In studies by Townsend and Douglass (2004), Patriot showed 100% survival 7 years after DED inoculation. This tree should be on every urban forester's "Top 10" list!

Elms...(continued from page 12)

Prospector – *U. wilsoniana*

Prospector is a straight Wilson elm (*U. wilsoniana*) selection out of the U.S. National Arboretum with excellent DED resistance and fairly good insect resistance. Like Cathedral, Prospector appears to be a favored food source for leaf hoppers which results in distorted foliage by mid-summer. This selection also has some hardiness issues similar to those observed in Frontier. It performs well during the growing season, with extremely high vigor, but lacks the hardiness of some of the other selections. This tree also has some problems with stem breakage due to bark inclusion.

Triumph™ - *U. japonica x wilsoniana*

Triumph™ is another new selection out of the Morton Arboretum in Illinois. Its parentage includes Vanguard™ and Accolade™. If you are looking for a tree with larger leaves than Accolade™, this might be the one! It has been relatively carefree in the nursery setting and has all the qualities of Accolade™ without many of the drawbacks like branch inclusion, breakage and so forth. It is reported to have less resistance to foliage feeders like the elm leaf beetle, however. This selection has also shown excellent performance on brownfield sites. Several have been on Nicollet Island in Minneapolis for ten years now and show great promise for tough urban sites!



Continued on page 14...

Elms for the Twin Cities (Zone 4b): A Guide for Selection and Maintenance (rev. 04/25/2010)

	DED Resistance ¹	Growth Rate	Hardiness	Insect Resistance	Form	Maintenance Requirements	Storm Breakage
Patriot	excellent	fast	excellent	excellent	vase	low	excellent
Pioneer	good	moderate	fair	fair	globe	low	excellent
Princeton	good	fast	good	fair	vase	high	fair
Prospector	excellent	moderate	fair	good	vase	high	fair
Triumph™	very good	v. fast	excellent	fair	vase	moderate	moderate
Valley Forge	excellent	v. fast	good	fair	vase	high	fair
Vanguard™	very good	fast	excellent	fair	vase	high	fair

¹ Dutch Elm Disease resistance and some of the insect resistance recommendations are based on data and observations at the University of Minnesota combined with previously published work. Please refer to the *Elms for the Twin Cities: A Guide for Selection and Maintenance* for a complete list of citations.

Elms...(continued from page 13)

Valley Forge – *U. Americana* 'Valley Forge'

Valley Forge is a true American elm introduction from U.S. National Arboretum with outstanding DED resistance. This tree has a lot of well-earned notoriety for being hard to manage in the nursery! Once it gets into larger stem caliper ranges it seems to “settle down” a little and take on a more manageable form and habit. If you are interested in trying this tree, be ready to devote enough time to pruning it for long-term health and branch structure. It is reported to be 96% resistant to DED in inoculation studies and appears to be fully hardy in USDA Hardiness Zone 4.



Vanguard™ - Complex hybrid with *U. japonica* and *U. pumila* heritage

Vanguard™ is another Morton Arboretum selection that is extremely vigorous. This tree follows closely behind Danada Charm™ in annual growth rate. It has a fairly upright form in the nursery and the leaves are similar to American elm in size and color. While this is a tough tree and grows very quickly, it also has some problems with poor branch architecture. Vanguard has a tendency to form co-dominant leaders while juvenile, so it's important to establish and maintain strong central leaders to make sure these trees maintain a form suitable for urban and community plantings. This tree has also had some problems with foliar leaf diseases in the spring. These usually don't cause any long-term problems, but may create aesthetic issues early in the season.

New American Elms – *U. americana*, Red Elms – *U. rubra*, and Rock Elms – *U. thomasii*

Work is continuing in cooperation with Dr. Robert Blanchette's Forest Pathology lab on evaluations of potentially resistant American and rock elm selections. We currently have several American, red, and rock elm clones that are undergoing inoculation experiments to determine DED-resistance. Field inoculations of these selections began in 2009 in a newly planted trial block at the University of Minnesota. Initial results are promising, but it will require a few more years of intensive screening before a release is possible. Watch our website for updates!

Selected references:

- Biggerstaff, C., J.K. Iles, and M.L. Gleason. 1999. *Sustainable urban landscapes: Dutch elm disease and disease-resistant elms*. SUL-4. Iowa State University
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- Kuser, J. and N. Polanin. 2001. Comparative test of six DED-tolerant elms: a preliminary report on nursery performance. *Journal of Arboriculture* 27(5). International Society of Arboriculture, Champaign, IL.
- Miller, F. 2002. *New elms for the landscape and urban forest*. The Morton Arboretum, Lisle, IL.
- Santamour, F.S., Jr. and S.E. Bentz. 1995. Updated checklist of elm (*Ulmus*) Cultivars for use in North America. *Journal of Arboriculture* 21(3). International Society of Arboriculture, Champaign, IL.
- Stennes, Mark. 2003. Good news for the American elm. *Shade Tree Advocate* 5(4). Minnesota Shade Tree Advisory Committee, St. Paul, MN.
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Green Bay Chapter WLCA Celebrates Arbor Day

By: Vijai Pandian, Horticulture Educator, UW-Extension

The Green Bay Chapter of the Wisconsin Landscape Contractors Association (WLCA) along with City of Green Bay Mayor Jim Schmitt and City of Green Bay Forester Mark Freberg participated in the planting of two trees at Sullivan School in Green Bay on April 30th as part of the Arbor Day celebration. The trees were donated by Tillmann Wholesale Growers. The WLCA members also educated the students and the community on the importance of trees and the proper way to plant trees.

Assisting with planting a thornless honeylocust were local school children, John McMahon from JM Landscaping & Nursery (President of the WLCA), Dave Berken from Springview Landscape, Vijai Pandian from Brown County UW-Extension, and Dar Schuurmans from County Material Corp.



Root collar: The interface region of the tree trunk and root system where the trunk flares up near the soil line.



From left to right: Dar Schuurmans, Dave Berken and John McMahon planting the Autumn Blaze maple tree at Sullivan School in Green Bay.

Mark your calendar!

For more information call the numbers listed or 920-391-4653

- June 26 5th Annual Door County Parade of Ponds, various sites in Door County.
 July 20-23 Farm Technology Days, Pierce County. For more information go to www.wifarmtechnologydays.com
 July 23-28 ISA Conference, Chicago, IL.
 July 27 Wisconsin Turfgrass Association Summer Field Day, O.J. Noer Turfgrass Research Facility, Verona.
 Aug. 12 WNA Field Day & Trade Show, Northwoods Nursery, Rhinelander.

Green Bay Botanical Garden Events

For more information call 920-490-9457

- May 15 Organic Lawn Care
 May 25 - Garden Design Basics
 May 26 - Garden Walk, Spring Bulbs
 June 3 - Lovely, Living Floral Bonnet
 June 4, 5, 6 - 26th Annual Garden Fair
 June 10 - Intro to Digital Photography
 June 16 - Pest ID and Control Options
 June 20 - Father's Day Open House
 June 22 - The Color Wheel - A Tool for Glorious Gardens
 June 24 - Now That You've Grown It: Herbs
 June 30 - Garden Walk, New Garden Development



Boerner Botanical Garden Events

Hales Corners, WI

- May 22 - Herb Faire
 May 26 - Garden Walk: Early Gems in the Rock Garden
 June 2 - Garden Walk: Hosta, King of the Shade
 June 9 - Garden Walk: Peonies, Old Fashioned, Fragrant Perennials
 June 10 - Rainwater: Catch It!
 June 16 - Garden Walk: Colorful Garden Flowers
 June 23 - Melinda Myers Garden Walk
 June 30 - Garden Walk: Butterfly Beacons

Olbrich Botanical Garden Events

Madison, WI

- May 20 - Beyond Green: Exploring Colored Foliage
 May 25 - Ferns: Natural History & Cultivation
 May 25 - Ornamental Container Gardening
 June 6 - Hosta Sale
 June 20 - Rose Show



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About this newsletter

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